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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,098	02/13/2002	Lysander Lim	SILA:075	7256

7590 09/12/2005
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EXAMINER

GESESSE, TILAHUN

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/075,098	LIM ET AL.	
	Examiner	Art Unit	
	Tilahun B. Gesessse	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/23/02, 11/28/04, 06/06/03, 9/2/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This is a supplementary office to the office action dated November 18, 2004, which has been vacated, due to preliminary amendment was not entered and the office action erroneously addresses canceled claims 1-2. The supplementary non-final office action to applicant preliminary amendment dated May 28, 2002 is as follows:

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show the drawings referring to prior art or conventional subject matter and the newly improved as applicant regards an invention as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should

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include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Claim 1 is a canceled claim based on preliminary amendment filed 5/28/02 and again claim 1 is presented as amended claim in the preliminary amendment, the numbering of claims is improper that canceled claim number is not part of the invention

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and can not be presented again. The newly added claims must be continue from the last number of canceled claim. Appropriate amendment is required.

Claims 3 and 5 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The subject matter as presented in claim 3, "the frequency of the output signal of the voltage-controlled oscillator is adjusted during a first adjustment phase, and wherein the frequency of the output signal of the voltage-controlled oscillator is fine tuned during a second adjustment phase." And claim 5, "the first feedback circuitry adjusts the frequency of the output signal of the voltage-controlled oscillator during the first adjustment phase, and wherein the second feedback circuitry adjusts the frequency of the output signal of the voltage-controlled oscillator during the second adjustment phase." These claims are rejected as improper because the subject matter presented in the claims does not further limits the previous claim that depends on.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225

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USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 13-26 are rejected under the judicially created doctrine of double patenting over claims 1-32 of U. S. Patent No. 6,388,536 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: continuous variable capacitance circuit having control signal and discretely variable capacitor having control signal.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application, which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 3-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Guthrie (US patent No. 5,343,168).

Claims 1, 5, Guthrie discloses a radio-frequency apparatus capable of transmitting RF apparatus (see abstract and figure 1) comprising:

Guthrie teaches transmitting path circuitry (see abstract and figure 1), including,

Guthrie discloses the a voltage-controlled oscillator circuitry (26)), the voltage-controlled circuitry configured to generate an output signal having an adjustable frequency in response to first and second control signals (see column 3, lines 62-column 4, line 65 and figure 1), a first feedback circuit the first feedback circuitry (runs from coupler 22 to SSB mixer 30 to phase detector 22, see figure 1) being responsive to the output signal of the voltage-controlled oscillator circuit (34), the first feedback circuitry configured to provide the first control signal to the voltage-controlled oscillator circuitry (see column 3, lines 62-column 4, line 65 and figure 1). Guthrie discloses a second feedback circuitry (runs from mixer 32 to mixer 18), the second feedback circuitry being responsive to the output signal of the voltage-controlled oscillator circuitry (34), the second feedback circuitry configured to provide the second control signal to the voltage-controlled oscillator circuitry tune control feedback, column 4, lines 52-65

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and figure 1). Guthrie discloses the first control signal coarsely adjusts the frequency of the output signal of the voltage-controlled oscillator circuitry to a desired frequency (column 4 ,lines 52-65 and column 4, line 66-column 5, line 29), and the second control signal fine tunes the frequency of the output signal of the voltage-controlled oscillator circuitry to the desired frequency (column 2, lines 29-45, column 4, line 66-column 5, line 29).

In addition to the recited teaching of the prior art the underline phrase "capable of" is an intended use phrase in which the reference applied inherently discloses the structure that permits the function to be performed.

Claim 3, Guthrie discloses all limitation as explained above in claim 1. Guthrie further teaches VCO is adjusted during a first adjustment phase (30), and wherein the frequency of the output signal of the VCO is fine tuned during a second adjustment phase ((Fb of figure 1 column 2, lines 29-45).

Claim 4. Guthrie discloses all limitation as explained above in claim 1. Guthrie inherently teaches the first adjustment phase occurs before the second adjustment phase (it is considered that the shifting of frequency of the vco output , adjusting phase one after the other feedback circuits, see abstract and figure 1, column 2, lines 1-28).

Claim 6, Guthrie discloses all limitation as explained above in claim 1. Guthrie further teaches the first control signal comprises a plurality of digital signals (60 of figure 3 and column 2, lines 1-28).

Claim 7. Guthrie discloses all limitation as explained above in claim 1. Guthrie inherently teaches the second control signal comprises an analog signal .

Claim 8. Guthrie discloses all limitation as explained above in claim 7. Guthrie further teaches the second adjustment phase commences in response to a signal provided to the second feedback circuitry by the first feedback circuitry (see figure 1 and it's disclosure).

Claim 9 Guthrie discloses all limitation as explained above in claim 8. Guthrie further teaches the first adjustment phase and the second adjustment phase occur before a transmit burst by the transmitter path circuitry (see figure 1 and column 2, lines 1-28).

Claim 10. Guthrie discloses all limitation as explained above in claim 9. Guthrie further teaches the first feedback circuitry is further responsive to a reference signal (see column 3, lines 50-68, column 2, lines 1-28).

Claim 11, Guthrie discloses all limitation as explained above in claim 10. Guthrie further teaches the second feedback circuitry is further responsive to an intermediate-frequency signal (column 5, lines 52-57)

Claim 12. Guthrie discloses all limitation as explained above in claim 11. Guthrie further teaches the second feedback circuitry is further responsive to a radio-frequency local oscillator signal (see coarse and fine oscillators of figure 1, column 2, lines 29-45).

Claim 27, It is a method claim which corresponds to apparatus claim 1 above. Therefore, it is analyzed and rejected for the same reason as set forth in the claim.

Claim 28. Guthrie discloses all limitation as explained above in claim 27. Guthrie further teaches the frequency of the output signal of the controlled oscillator during a first adjustment phase; and fine tuning the frequency of the output signal of the

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controlled oscillator circuitry during a second adjustment phase((Fb of figure 1 column 2, lines 29-45).

Claim 29. Guthrie discloses all limitation as explained above in claim 28. Guthrie further teaches performing the first adjustment phase before the second adjustment phase (Fb of figure 1 column 2, lines 1-28).

Claim 30. Guthrie discloses all limitation as explained above in claim 29. Guthrie further teaches using the first control signal to adjust coarsely the frequency of the output signal of the controlled oscillator circuitry during the first adjustment phase; and using the second control signal to fine tune the frequency of the output signal of the controlled oscillator during the second adjustment phase (it is considered that the shifting of frequency of the vco output , adjusting phase one after the other feedback circuits, see abstract and figure 1, column 2, lines 1-28).

Claim 31, Guthrie discloses all limitation as explained above in claim 30. Guthrie further teaches the first control signal comprises a plurality of digital signals (60 of figure 3).

Claim 32. Guthrie discloses all limitation as explained above in claim 31. Guthrie inherently teaches the second control signal comprises an analog signal.

Claim 33. Guthrie discloses all limitation as explained above in claim 22. Guthrie inherently teaches performing the first adjustment phase, the second adjustment phase and starting a transmit burst.

Claim 34. Guthrie discloses all limitation as explained above in claim 33. Guthrie further teaches generating the first control signal further comprises using a reference

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signal (14) to derive the first control signal (reference 14 through comb gen circuit 12 generates the control signal fb, figure 1, column 2, lines 1-28).

Claim 35. Guthrie discloses all limitation as explained above in claim 34. Guthrie further teaches generating the second control signal further comprises using a radio-frequency local oscillator signal to derive the second control signal (see coarse and fine oscillators of figure 1, column 2, lines 1-28).

Claim 36. Guthrie discloses all limitation as explained above in claim 35. Guthrie further teaches generating the second control signal further comprises using an intermediate-frequency signal to derive the second control (column 5, lines 52-57).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guthrie in view of Nanni et al (US patent No. 4,998,077) "Nanni".

Claim 13. Guthrie discloses all limitation as explained above in claim 1. Guthrie does not teach a continuously variable capacitor having a plurality of capacitor stages, the continuously variable capacitor having a capacitance that varies in response to an analog control signal; and a discretely variable capacitor coupled in parallel with the

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continuously variable capacitor, the discretely variable capacitor having a capacitance that varies in response to a plurality of control signals.

However, Nanni teaches a continuously variable capacitor having a plurality of capacitor stages, the continuously variable capacitor having a capacitance that varies in response to an analog control signal; and a discretely variable capacitor coupled in parallel with the continuously variable capacitor, the discretely variable capacitor having a capacitance that varies in response to a plurality of control signals (see column 1, lines 23-50 and column 2, lines 20-25 and figure 2). Guthrie and Nanni both invention deals with voltage controlled oscillator (VCO), then, it would have been obvious to an artisan of ordinary skill in the art at the time of the invention was made to continuously and discretely varying capacitor for controlling voltage , as taught by Nanni , in order to control the oscillator to operate over range of frequencies proportional to the frequency of interest or desired frequency .

Claim 14. Guthrie and Nanni teaches all limitations as discussed above in claim 13, and Nanni teaches the continuously variable capacitor comprises a plurality of variable capacitors coupled in parallel (see column 1, lines 23-50 and column 2, lines 20-25 and figure 2).

Claim 15, Guthrie and Nanni teaches all limitations as discussed above in claim 14, and Nanni teaches a capacitance of each variable capacitor in the continuously variable capacitor varies in response to a plurality of signals derived from the analog control signal (see column 1, lines 23-50 and column 2, lines 20-25 and figure 2).

Claim 16 Guthrie and Nanni teaches all limitations as discussed above in claim 15, and Nanni teaches the discretely variable capacitor comprises a plurality of capacitor-switch combinations coupled in parallel (see column 1, lines 23-50 and column 2, lines 20-25 and figure 2).,

Claim 17, Guthrie and Nanni teaches all limitations as discussed above in claim 16, and Nanni teaches each of the plurality of control signals controls a corresponding one of the switches in the plurality of capacitor- switch combinations (see column 1, lines 23-50 and column 2, lines 20-25 and figure 2)..

Claim 18, Guthrie and Nanni teaches all limitations as discussed above in claim 17, Guthrie further teaches the feedback circuit comprises a first feedback circuit and a second feedback circuit (see figure 1).

Claim 19, Guthrie and Nanni teaches all limitations as discussed above in claim 18, Guthrie further teaches the first feedback circuit comprises a frequency calibration engine configured to supply the plurality of control signals (see figure 1).

Claim 20, Guthrie and Nanni teaches all limitations as discussed above in claim 19, Guthrie further teaches the frequency calibration engine supplies the plurality of control signals in response to a reference signal and the output signal of the voltage-controlled oscillator circuit (see figure 1).

Claim 21. Guthrie and Nanni teaches all limitations as discussed above in claim 20, Guthrie further teaches the second feedback circuit comprises a mixer, the mixer configured to provide a mixed signal derived from the output signal of the voltage-controlled oscillator circuit and a radio-frequency local oscillator signal (see figure 1).

Claim 22. Guthrie and Nanni teaches all limitations as discussed above in claim 21, Guthrie further teaches the second feedback circuit further comprises a phase detector circuit, the phase detector circuit configured to provide an error signal derived from the mixed signal and an intermediate-frequency signal (column 2, lines 1-28 and abstract).

Claim 23, Guthrie and Nanni teaches all limitations as discussed above in claim 22, Guthrie further teaches the second feedback circuit further comprises a filter circuit, (24) the filter circuit configured to supply the analog control signal in response to the error signal (see figure 1).

Claim 24. Guthrie discloses all limitation as explained above in claim 23. Guthrie further teaches receiver circuitry configured to receive a radio-frequency input signal (see figures 1 and 3).

Claim 25. Guthrie discloses all limitation as explained above in claim 24. Guthrie inherently teaches the receiver circuitry couples to signal processing circuitry within a second integrated circuit.

Claim 26 Guthrie discloses all limitation as explained above in claim 25. Guthrie further teaches the receiver circuitry comprises low intermediate-frequency receiver circuitry (see figures 1 and 3).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gomez et al (US publication patent No 2002/0008593) teaches voltage controlled oscillator (12) and output feedback circuit (see figure 1).

Ishigaki (US patent No. 4,888,564) teaches a PLL circuit having a function of a frequency multiplier comprises a phase detector circuit receiving an input signal for producing an error signal which includes an alternating current component having a relatively high frequency depending on the frequency of multiple signals (abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tilahun B Gesesse whose telephone number is 571-272-7879. The examiner can normally be reached on flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-2738300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TILAHUN GESESSE
PRIMARY EXAMINER 8/4/05